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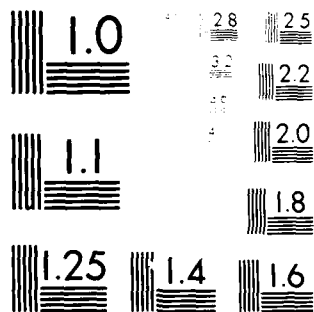
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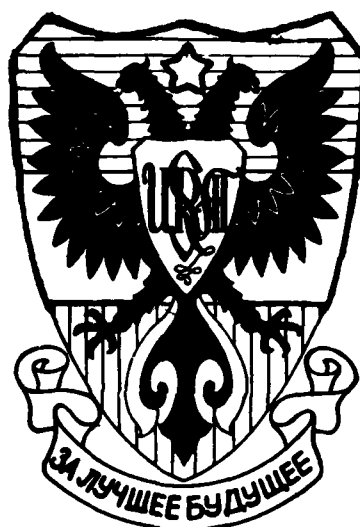
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STUDENT RESEARCH REPORT

SOVIET FRONTAL AVIATION OPERATIONS:
CONCEPTS AND PROBLEMS

1981

LTC KERRY L. HINES

GARMISCH, GERMANY

APO NEW YORK 09053

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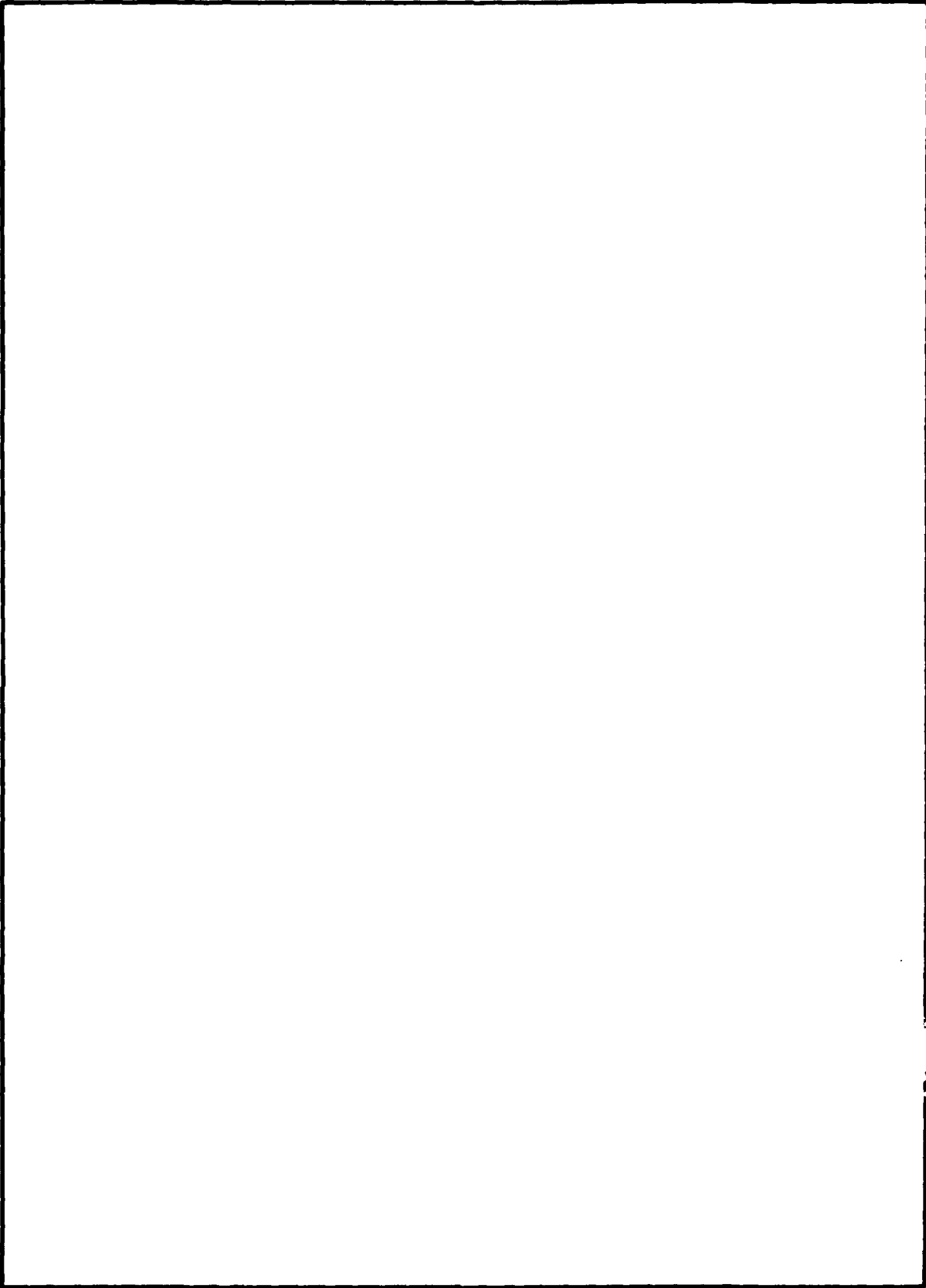
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F O R E W O R D

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SUMMARY

In this report the author examines the impact that rapid modernization has had on Frontal Aviation employment. The report includes Soviet views on basic principles of organization, command and control, and the manner of executing the four basic missions: air defense cover, aerial reconnaissance, air escort, and ground support. The author concludes that the process of rapid modernization has created certain employment problems, particularly in air-ground coordination and airspace management. Frontal Aviation is still seeking to resolve these problems, attempting to match personnel capabilities to those of the equipment.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
FIGURE 1 (SOVIET AVIATION COMPONENTS)	22
FIGURE 2 (SOVIET AIR ARMY ORGANIZATION)	23
FIGURE 3 (OPERATIONAL COORDINATION ADA SECTION FOR A FRONT) . . .	24
ENDNOTES	25
BIBLIOGRAPHY	28

SOVIET FRONTAL AVIATION OPERATIONS: CONCEPTS AND PROBLEMS

Since the late 1960s the West has experienced successive "shocks" as different aspects of the rapid build up of Soviet strategic and tactical forces have become evident. The invasion of Czechoslovakia demonstrated the capabilities of the Soviet Armed Forces to organize, conduct, and support swift, large-scale combined-arms operations, skillfully employing deception and electronic warfare support measures to shield their intentions. In the Strategic Arms Limitation Talks the United States recognized the Soviet achievement of parity in strategic nuclear weapons. The global presence and power projection capability of the Soviet blue water navy have become accepted factors and gained prominence in the West. However, while these Soviet military capabilities have received considerable attention in the West, the dramatic changes in Soviet aviation (except perhaps the strategic airlift capability demonstrated during the Egyptian resupply operation in 1973) have received little emphasis.

Since 1968 Soviet aviation has undergone major modernization and restructuring, with the rapid introduction of a large number and variety of sophisticated third generation jet aircraft. Soviet aviation has attained the capabilities to execute a variety of missions under different strategic and tactical conditions, including the ability to conduct sustained operations in a protracted non-nuclear conflict. "Today our aviation units and subunits are armed with excellent combat equipment, which allows the execution of diverse missions under any weather and tactical conditions."¹

Soviet aviation is divided into five components: Long-Range Aviation (Dal'naya Aviatsiya), Frontal Aviation (Frontovaya Aviatsiya), Military Transport Aviation (Voyenno-transportnaya Aviatsiya), the Air Defense Command (PVO Strany), and Naval Aviation (Morskaya Aviat-siya). The first three components comprise the Soviet Air Forces (Voyenno-vozdushnyye Sily) (See Figure 1). The division of responsibilities among the five components is fairly clearly defined. The assignment of missions to the five creates considerable opportunities for the provision of mutual support.

The basic missions of Long-Range Aviation are strategic air strikes and reconnaissance. In addition, a likely tasking of Long-Range Aviation would be to reinforce Frontal Aviation with medium-range bombers, such as the Backfire. Frontal Aviation is the largest component of Soviet air power and is tasked to support ground forces in Theaters and Fronts. Frontal Aviation has four basic missions: air defense cover, aerial reconnaissance, air escort, and ground support.

The basic mission of Military Transport Aviation is the provision of airlift support. Military Transport Aviation could expect to receive major reinforcements from the Soviet national airline, Aeroflot, and to reinforce the limited helicopter airlift capability of Frontal Aviation.

The Air Defense Command is responsible for the defense of the Soviet homeland and the integrated Warsaw Pact air defense region from aerospace attack. It could also be tasked to reinforce Frontal Aviation's air defense capability.

Naval Aviation is expected to support naval operations through the execution of the missions of antisubmarine warfare, maritime reconnaissance and attack, and maritime air support. Naval aviation could be called

on to support other components or could be supported by other components.

The changes that have been made in Frontal Aviation since the late 1960s are far more significant than those that have occurred in the other components of Soviet aviation. First, the changes in Frontal Aviation are an integral component of the total modernization program for Soviet conventional forces and would appear to signal a change in the Soviet concept of modern theater warfare; that is, signalling a shift from the position that any major future conflict would definitely include the early use of nuclear weapons, to a belief that it is possible to wage at least an extended initial phase, if not a complete future conflict, with conventional forces only. The deep-penetration and conventional strike capability of Frontal Aviation has greatly obviated the former, virtually total, reliance on nuclear armed medium range ballistic missiles for strikes against an opponent's nuclear delivery system, command and control facilities, and airfields. Second, the modernization program has been paralleled by a rapid evolution of combined arms doctrine. The former preoccupation with the ground forces tactics of concentrated breakthrough operations has given way to emphasis on wide, open-front operations with the principal form of battle being regimental-size meeting engagements. Armored and mechanized forces have been reorganized and given the high degree of cross-country mobility necessary for quick concentration and dispersal. Organic, protective, and supporting fire means have been increased multifold, and the latter have been given mobility comparable to that of the forces they are expected to support and protect. Third, the deployment of a wide array of mobile and semi-mobile air defense missile and gun systems (protective fire means) has

partially freed Frontal Aviation from its almost total earlier commitment to the air defense cover mission at the expense of the ground support mission. Frontal Aviation has changed from being a predominantly defensive force to one with considerable, and increasingly improved, offensive capabilities.

The changes in the ground forces equipment and tactics have both allowed and necessitated major changes in Frontal Aviation doctrine and equipment.

The deemphasis on preplanned area fire missions for Soviet artillery in favor of time-sensitive targets has created a new role for Soviet tactical airpower. In taking over a substantial fraction of the deep interdiction and ground-support strikes formerly carried out by missile and tube artillery, a requirement for new and more capable ground-attack aircraft has been created. Similarly, Soviet ground force tactics have created a combined deep penetration and antitank role for the helicopter--a partial replacement for artillery and other direct fire weapons. The attention being focused on the meeting engagement (and modifications in the Soviet division structure to support it) rather than the exclusive focus on breakthrough operations has made it necessary for the FA to procure heavy payload/long-range aircraft compatible with this role.²

The changes in aviation in general, and in Frontal Aviation in particular, have introduced a degree of mobility, flexibility, and fire power never before available to the Soviet Armed Forces. However, the changes in equipment have also introduced significant changes into Frontal Aviation employment procedures. The employment of a larger number of aircraft and the execution of air strikes closer to friendly forces has greatly complicated the problems of command, control, and coordination, especially airspace management and air-ground coordination. The purpose of this report is to examine Frontal Aviation employment concepts and attempt to identify those weaknesses which might be turned to an opponent's advantage.

The guiding principles for the organization, employment, and command and control of Frontal Aviation are principally outgrowths of the experiences of the Great Patriotic War. For the first year of the war the remnants of the Soviet Air Forces were fragmented under the control of Soviet ground commanders. This fragmentation prohibited the coordinated and effective employment of aviation. In May 1942 a major reorganization was affected.

A very successful type of organizational structure for Frontal Aviation was discovered and successfully applied -- the Air Army, which was a large strategic formation. This put an end to the atomization of aviation. A formation in the structure of an air army for all Frontal Aviation allowed the application of it in mass and centralized direction of it on the scale of a Front and formed the conditions for closer operational and tactical coordination with the ground forces.

In line with this, the structure of formations, units and sub-units was upgraded. Formations of a mixed composition were supplanted by homogeneous ones: of interceptors, fighter/bombers, and bombers. The experience of the war shows that the perfection of the organizational structure promoted an increase in firepower, strike force, and maneuverability of the formations and units; the formation of firm organs of control; and an increase in the capability to conduct sustained operations.

The organizational principles enumerated by General Kutakhov, Chief of Staff of the Soviet Air Forces, are those followed in Frontal Aviation today. Frontal Aviation is deployed in 16 Air Armies (See Figure 2) and maintains homogeneous formations by aircraft type and function. One Air Army is deployed in support of each of the Soviet Groups of Forces in Eastern Europe and one each in 12 of the 16 Military Districts in the USSR.⁴ The 16th, assigned to the Group of Soviet Forces in Germany, is the largest of the Air Armies.

During peacetime, operational control of an Air Army is exercised by the commander of the group of forces or military district to which it is assigned. During wartime, front commanders (a title which the

commanders of the four Groups of Forces in Eastern Europe likely would quickly acquire in the event of hostilities) have operational control of the Air Armies. The Air Army commander becomes the assistant Front commander for aviation, advising the Front commander on the employment of aviation assets. The Air Army commander retains direct control of the air assets.

"Precise and centralized control" is emphasized as "one of the decisive conditions for the successful conduct of combat operations" by air forces.⁵ Strict centralization of control in the hands of the Air Army commander provides a flexible and reliable system of control and allows for the rapid shifting and concentration of massive airpower on a narrow, decisive sector of the battlefield, the swift deployment of forces in the direction which offers the greatest opportunity for success, and the maintenance of a strong air reserve that can be used to quickly react to sharp changes of conditions on the battlefield.⁶

Another principle for the employment of Frontal Aviation that receives heavy emphasis is the need for close coordination between air and ground units.

The military annals of the Great Patriotic War contain countless examples of effective aviation operations in support of ground forces in battle, and in Army and Front operations. The principal and decisive aspect of success was the thorough organization and persistent, supportive, tight coordination of ground forces and aviation.

The need for close air-ground coordination is a recurring theme in "aviation-tactical exercises." It is repeatedly stressed that the exercises must offer realistic conditions that approximate actual combat conditions, so that the skills and habits developed during the exercises will be those needed in combat. The "exceptionally high dynamics, great

speeds of troop movement on the battlefield, rapid changes of tactical conditions", and limited time for the commander to make decisions has greatly increased the need for close coordination between the various branches of the Armed Forces, particularly between aviation and ground forces.⁸

Nowadays, no one has any doubt that the mutual deepening of knowledge of tactical fundamentals and the mastery of the art of precise coordination and control have already become the most important factors on which the outcome of the battle depends.

The principal method by which Soviet forces seek to achieve air-ground coordination is through the exchange of "representatives" between air and ground units. The Air Army commander, who will be serving as the assistant Front commander for aviation, is the aviation representative at the Front commander's command post (CP). The Air Army commander is expected to establish his own CP in close proximity to the Front CP. He and his staff design a tasking for aviation assets to support the ground operations plan.

An aviation unit that is designated to support a particular ground unit is responsible for providing air liaison officers (ofitseri svyazi aviatsii) to the supported unit(s). The air liaison officers are assigned to the operations/intelligence sections of aviation headquarters. They receive special training in directing air strikes; must be knowledgeable in ground forces' tactics, equipment, and capabilities; and be able to advise the ground commander on the suitability of striking particular targets with aviation.¹⁰ The air liaison officers are expected to develop a "personal relationship" -- one that will lead to a feeling of "mutual trust" -- with ground commanders. Such a relationship is deemed a prerequisite for the close coordination that is necessary to

deal effectively with the many complicated problems which arise during combat operations. Prior to an operation the air liaison officer and ground commander must develop a system for coordinating actions according to time and place, as well as systems for clear mutual identification and target designation.¹¹

Air support controllers (avianavodchiki) are located in combat formations of ground forces. Air support controllers are experienced aviators who are trained to control aircraft and helicopters which make strikes in support of ground units.¹² It would seem that they are attached to regimental headquarters; and the regiments, in turn, place them with the battalions conducting the main attack. At least some air support controllers have been equipped with BTR-60s, which have been modified with a plexiglass observation bubble in place of the turret on the standard model. Air support controllers must meet with supporting aviation unit representatives prior to an operation and work out radio signals and commands for mutual identification.¹³

There is a recognized need for Frontal Aviation unit commanders and aviators to gain greater familiarity with the ground forces' tactics, equipment, and capabilities. A method recommended "as one of the most effective forms of training commanders in the art of coordination is periodic assemblies of air and ground commanders." The benefit of such assemblies is not only the "exchange of information," but the development of personal relationships and "combat comradeship."¹⁴

Coordination must also be developed between aviation units. Close coordination between ground-attack aircraft and interceptors is especially important. It is interesting to note, that despite the heavy Soviet emphasis on dispersion as a security measure (with several hundred

improved airfields and many hundreds of grass airstrips in Eastern Europe), "experience showed that the combined or close basing of coordinating units gave commanders and pilots the possibility to prepare in detail and carry out joint plans, especially when repeated flights had to be organized in the shortest possible time."¹⁵ The preference for face-to-face coordination and the preparation of detailed, unit-level plans for coordination may force the Soviets to concentrate forces to a greater extent than they profess to prefer.

During the last few years the Soviet Armed Forces have conducted a number of large-scale, combined-arms exercises with large air-contingent participation. Operation "Berezina", conducted in February 1978 in the Belorussian MD, had as one of its primary objectives the resolution of questions on the coordination of combat operations among the various services. Published descriptions and analyses of these exercises offer some insights into the manner in which Frontal Aviation intends to execute its missions.

"Aviation can defeat the offensive capability of the enemy, carry out support of ground forces, successfully fight for air superiority, conduct aerial reconnaissance, and execute many other combat missions."¹⁶ The four basic missions of Frontal Aviation have already been mentioned -- air defense cover (prikrytiye), aerial reconnaissance (razvedka), escort (soprovozhdeniye), and ground support (podderzhka). Since these terms differ somewhat from the terms used in the West -- close air support, battlefield interdiction, and tactical air reconnaissance -- some explanation of their meaning and probable manner of execution is in order.

The execution of the air defense cover mission is aimed not only at the protection of ground and air forces from hostile air action, but also includes a firm commitment to the early achievement of total air superiority. During Operation "Berezina", "interceptors covered the forces in the areas of concentrations and on the battlefield, conducted the struggle for air superiority, and executed other missions arising in the course of the exercise."¹⁷

The Soviets place great emphasis on the early achievement of air superiority and base their stress, to a large degree, on the experiences of the Great Patriotic War.

The experience of the War verifies that the achievement of air superiority is the necessary and obligatory condition for the attainment of success in operations and the war. Having secured it, aviation will be able to concentrate its¹⁸ principal forces on the support of ground and naval forces.

The central concept of the air defense cover mission is not defensive response to enemy air actions, but strong offensive actions aimed at the destruction of, first, the enemy's air power, and then, his air defense capability. A proven and preferred method of destroying an opponent's air power is massive airfield strikes. The Soviets base this not only on their own World War II experiences, but also on their evaluations of air operations in post-War conflicts.

During the 1950s-1970s there has not been a single local conflict in which modern (for their time) combat aircraft and air defense means have participated, that has not included aviation strikes on the enemy's airfields. Such strikes proved to be, for example, the decisive influence on the outcome of the "Six-day" War in 1967 in the Middle East. The experience of local wars confirmed once again, that the features of the past are persistently repeated on a new basis, relative to the sharply increasing possibilities of the means of armed conflict. New factors, which must be studied during the development of tactics, are: the increasing fire power of aircraft, the equipping of them with sighting and navigational systems and means for conducting electronic warfare; the defense of airfields by air defense

missile complexes (in coordination with antiaircraft artillery); the construction of hard shelters for aircraft; and the presence of a zone of tactical air defenses, equipped with troop anti-aircraft means, which the aircraft must overcome enroute to the strike objective (airfield).¹⁹

Despite these "new factors" which impact on the planning and conduct of airfield strikes, "surprise continues to play the decisive role" in the execution of such strikes.²⁰ Surprise can be attained by the selection of a propitious time for executing the strike, conducting the approach (flight) in secrecy, and attacking from the direction which the enemy considers as presenting the least danger. Night strikes or strikes during periods of heavy overcast are preferred because of the limitations on visually-directed air defense systems under these conditions.

The route to and from the target should, ideally, avoid the enemy's air defenses; however, this will not always be possible. When hostile air defenses must be overcome, deception tactics will be employed to mask the true intentions of the strike force; electronic warfare measures will be used to cause maximum degradation to the enemy's early warning capability; and the main strike force will be preceded by one-two minutes by a secondary force, whose mission is to blast a corridor through the air defense network.

The strike force must have a force ratio of at least 1:1 to the enemy in the target area. Appropriate ordnance for an airfield strike includes: concrete-piercing bombs for destruction of runways, fragmentation bombs for the destruction of unprotected aircraft and for causing personnel casualties, and medium, high-explosive bombs to handle other targets.²¹

The experience of "local wars" in the 1950s-70s also shows that air defense capabilities, the destruction of which is necessary for the effective employment of aviation, have greatly increased. During the

1973 War in the Middle East, "Israel lost 105-107 aircraft in the course of 18 days, 99 percent of which were shot down by ground air defenses." Of the total number of Israeli aircraft lost to ground fire, "eighty percent were downed by surface-to-air missiles."²²

Weak air defenses can be overcome by massive employment of aviation using dense, echeloned, mutually-supporting formations. Strong air defenses, particularly those equipped with guided missile systems, should be attacked by small, echeloned groups of aircraft, operating at the lowest possible altitude. The strike force must be supported by the intensive jamming of all types of radio-electronic equipment of the air defense systems.²³

The advantage of air superiority, especially when achieved early in a conflict, are, of course, multifold. First, as indicated by General Kutakhov, it allows the principal aviation forces to concentrate on support missions. During the war Soviet interceptors were sometimes employed in a ground support role, a secondary mission for modern Soviet interceptors. However, unlike the World War II era aircraft, many of the modern Soviet interceptors are dual-capable aircraft. Their release from defensive operations would greatly increase offensive air capabilities. Second, air superiority allows greater freedom of action in the conduct of offensive operations. A favorite form of tactical air employment during the Great Patriotic War, after the Soviets had achieved at least air parity with the Germans, was the use of armed reconnaissance flights (svodobnaya okhota) in the enemy's rear areas to disrupt resupply operations and troop movements.²⁴ In the majority of recent exercises, air superiority was achieved before helicopters were employed against armor.

From the Soviet perspective, there may also be certain necessities to establishing early air superiority. Soviet interceptors operate only under the direct control of a ground intercept controller. The vulnerabilities of such a system to electronic countermeasures, and the limitations of the system to handle multiple air threats are obvious. A second necessity for air superiority could well be the increased difficulties which the expansion of air and air defense assets have created in airspace management. Western armed forces have struggled with the airspace management problem for some time, applying various procedural and technical innovations to solve the problem. Yet, despite these efforts, a considerable number of friendly aircraft are "lost" to their own ground air defense systems in every exercise. "Soviet air doctrine attempts to minimize these problems by prescribing that interceptors operate only above 10,000 feet."²⁵

The Soviets write only in rather general terms about airspace management, which could indicate that they too are still seeking a workable solution. For example:

The character of the struggle with the modern air enemy creates the necessity of continuous perfection of a command and control system for (PVO) units and subunits, of their operations on the battlefield and their fire, and for skillful coordination with interceptor aviation and other services. Purposeful and active work is carried on in that direction.²⁶

Soviet forces had to devise an airspace management system while conducting active operations against the Germans during the Great Patriotic War. Figure 3 is a representation of the system that was adopted -- the "operational coordination PVO sections of a Front or Army." Since the air defense troops of the ground forces have been a separate branch since 1958, they would no longer be subordinate to the

artillery commander. However, there is still a definite need for a coordination link with artillery. Otherwise, "the accumulated experience on the command and control systems for the air defense of the ground forces during the past war"-- relative to the methods of organizing the combat actions of air defense units, their command and control, and their coordination with adjacent air defense units, interceptor aviation, and the forces being defended -- "is highly instructive and applicable at the present time."²⁷

All air crew members are expected to conduct aerial reconnaissance while carrying out combat missions; however, the major responsibility for executing the aerial reconnaissance mission belongs to the reconnaissance regiments in the air armies. During Operation "Berezina", "aerial reconnaissance persistently fulfilled the tasks of the commander for detecting the dispositions and capabilities of the 'enemy' forces at tactical and operational depths."²⁸

Aerial reconnaissance is both a primary and continuous mission for Soviet aviation. Frontal Aviation responsibilities extend to tactical (the enemy's division rear area) and operational (the enemy's corps rear area) depths; although, it may also be tasked to reconnoiter targets at a greater depth "in the interest of Long-Range Aviation."²⁹ Reconnaissance is conducted to determine the opponent's intentions and to collect intelligence for planning ground and air operations. The principal methods are visual observation, aerial photography, and radio-electronic means. The latter method is the main one for nighttime and adverse weather. Special emphasis is placed on the complete aerial photographing of areas or targets (aerial mapping) for future operations. Photographic maps play a key role in the detailed preparation and practice

that precedes offensive operations, especially the simulation of all conceivable variants before air strikes. The significance of this aspect of aerial reconnaissance was recognized during the Great Patriotic War.

After the determination of the objectives of the strikes, a highly important mission was assigned to aerial reconnaissance -- to photograph them at the earliest possible date. On the photo map boards the air crews studied targets, worked out the tactics for strikes and the measures for neutralizing enemy air defenses. At the same time, long-range photographing of roads and water obstacles was made, on which operations of the mobile formations were planned. Photo map boards of a long-range survey were used for working out coordination between aviation and armor formations.³⁰

Reconnaissance missions are normally flown by a single aircraft. This places special responsibilities on the reconnaissance pilot. He must know the region of the flights perfectly and be familiar with ground forces' tactics so that he can correctly evaluate conditions and select the most favorable maneuver for the survey. Also, he must be highly knowledgeable in the capabilities of aerial photographic equipment; know when, where, how, and under what conditions to use one or another aspect of aerial survey and, if necessary, be able to repair the photographic equipment. Ideally, he should also be technically proficient at servicing his own aircraft.³¹ He is expected to conduct his mission in such a manner that the target does not realize it has been reconnoitered but, at the same time, collect the details about the target which are required for planning an attack.

The escort mission includes support provided by aircraft to secure an air operation behind enemy lines, excluding fighter escort and cover. There are basically two types of escort missions: the support of air-mobile and airborne assaults by fighter/bombers and the support of air

operations (for example, air defense suppression) by dedicated ECM aircraft.

The former aspect of the escort mission was practiced in a number of recent exercises. For example, during Operation "Neman" (23-27 July 1979 in the Baltic MD) a fighter/bomber squadron was assigned the mission of supporting a tactical assault into the "enemy's" rear.

Although the weather conditions were difficult, the eight fighter/bombers, literally just seconds before the arrival of the Military Transport Aviation aircraft, arrived at the target exactly according to place and time and made rockets and bomb strikes on air defenses and fire points. The success of the assaulters was predetermined.³²

During Operation "Brotherhood-in-Arms-80" (September 1980 in East Germany) Soviet fighter/bombers were employed in support of an East German heliborne assault made behind enemy lines. The objective of the assault was to seize a bridgehead for a river crossing operation.³³

Soviet forces have at their disposal an abundance of ECM equipment. Frontal Aviation assets dedicated solely to ECM include: 20 Yak-28 Brewer E and 5 An-12 Cub B/C aircraft, and 30 Mi-4 Hound C helicopters.³⁴ Frontal Aviation could, in addition, receive support from the approximately 100 dedicated ECM aircraft in Long-Range Aviation. The Soviets regard ECM as a basic weapon of warfare, and its employment in the Arab-Israeli wars has been closely studied.

Electronic warfare in the Arab-Israeli wars distinguished itself by its intensity, was conducted with the use of a large number of means of ECM, of fire destruction, and a variety of radio-electronic equipment of the air forces, air defense forces, navy, and ground forces.³⁵

The attention which Western analysts gave to "operating frequencies, duration, frequencies of repetition, structures, and other parameters of radio signals" is noted as being "knowledge, which is necessary for the

perfection of equipment, methods and tactics" for the conduct of ECM operations.³⁶

The mission of ground support encompasses a variety of air operations, a considerable number of which were practiced during Operation "Berezina".

Fighter/bombers delivered powerful fire strikes on various objectives on the battlefield and in the immediate rear of the "enemy", and supported the operations of the ground forces in the offense and defense.

Combat helicopter units effectively interacted with the ground forces. They were always located in the thickest of the battle: with the fire of onboard rocket launches, with bomb salvos, and with machinegun fire, they destroyed designated targets and; on request from the ground, they rendered fire support to ground forces.

Units of Military Transport and helicopter aviation gave great help to the ground forces. Liaison aircraft and helicopters delivered, in good time, necessary information and provided constant communications.³⁷

Ground support missions for helicopter units also include airlift for air assaults, the laying of smoke screens for operations in open terrain, and aerial mine laying in difficult (such as mountainous) terrain.

The main aspect of the ground support mission is the delivery of air-to-ground ordnance. The Soviets display a preference for using helicopters for immediate, time-sensitive strikes, especially those in close proximity to friendly troops. Fixed-wing aircraft (fighter/bombers) more frequently are employed for preplanned strikes. This preference appears to be primarily an outgrowth of the air-ground coordination system and a reflection of the ability of the pilots.

Prior to the beginning of an operation, detailed plans are developed for the employment of air strikes. Plans specify explicitly the targets, strike aircraft, time, location, attack technique and ordnance, and approach and departure routes. Using sand tables, aerial photographs,

maps, and models; the "sequence of actions of the crews in various conditions of the situation is worked out in simulation to the point of automatism."³⁸

While the same degree of "automatism" is sought in helicopter ground support operations, the target designation and identification procedures for immediate air strikes offer a greater opportunity for success by helicopters than by high-performance aircraft. The air support controller or air liaison officer with the ground unit requesting the strike provides only the location, either in grid coordinates (kvadrati) or in relation to a pre-arranged reference point (oriyentir), and the time to execute the strike. The target is seldom, if ever, marked, although the ground unit may, at times, attempt to signal its position by pyrotechnics. The job of locating the target is really left up to the pilots and creates a potentially dangerous situation for friendly ground units in the target area. For example, during Operation "Neman", the commander of a helicopter strike force "did not succeed in immediately orienting himself on the terrain and did not locate the target right away (the 'enemy' had successfully employed camouflage techniques)." Consequently, when he came under attack by ground air defense, he became further disoriented and "attacked his own tank column."³⁹

The requirements to deliver ordnance in close proximity to ground forces place high demands on the pilots executing such missions.

It is one thing when pilots complete an independent mission, for example, striking a ground target or intercepting an enemy aircraft; but it is something different if they execute a strike in the interest of ground forces, in the immediate proximity of attacking or defending units. That imposes on pilots the highest responsibility for their military learning. They must be able to rapidly and exactly evaluate and apply exactly that measure, which is dictated by the given conditions.⁴⁰

Helicopters allow pilots to more "rapidly and exactly evaluate conditions", combining the advantages of "the ability to quickly execute maneuvers and concentrate undetected for strikes, high mobility, and the fire of long-range anti-tank guided missiles, which make them a particularly effective anti-armor weapon."⁴¹ (In fact, one of the most popular scenarios for aviation-tactical exercises involves the employment of a helicopter strike against the flank of a counter-attacking "enemy" armor column.) If one adds to the above advantages the considerable on-station time of helicopters, slow speed (for the Mi-24, about 150 knots), forward stationing with simple airfield requirements; good pilot visibility, and the large, diversified ordnance loads possible with the Mi-8's Mi-24; a fairly clear picture develops of the benefits of employing helicopters for immediate, direct support of ground forces. One further apparent advantage (based on the descriptions of actions and radio transmissions in exercises) is that the Mi-24, and probably Mi-8, have radios that can net with ground forces' radios.

In contrast, high-performance aircraft are perceived as being vulnerable to air defenses when executing strikes. This necessitates low-altitude, high-speed target approaches and minimum time in the target area. In such an approach "the pilot will have only 3-6 seconds to identify the target, which is quite insufficient to identify the target and make a corrective turn to attack it."⁴² If the pilot does not detect and attack the target during the initial approach, it is tactically unsound to attempt a second approach after the element of surprise has been lost. Thus, high-performance aircraft are more suitable for striking identifiable battlefield targets or previously reconnoitered fixed and semi-fixed targets. The latter types of targets allow the pilot to plan

his attack thoroughly and to set-up for his attack from a pre-established, easily recognized reference point.

In the military academies, Frontal Aviation pilots "receive good theoretical preparation" and "systematic and special experience". In units they "master modern equipment"; learn to "execute exercise combat missions creatively, to display initiative, resourcefulness and courage; and seek to "absorb all the valuable experience of the best pilots of their units."⁴³ The Soviet military press gives great attention to the "achievements" of particular pilots (usually pilots with a First Class rating), extolling the correctness of a decision or action and holding them up as an example to the "youth".

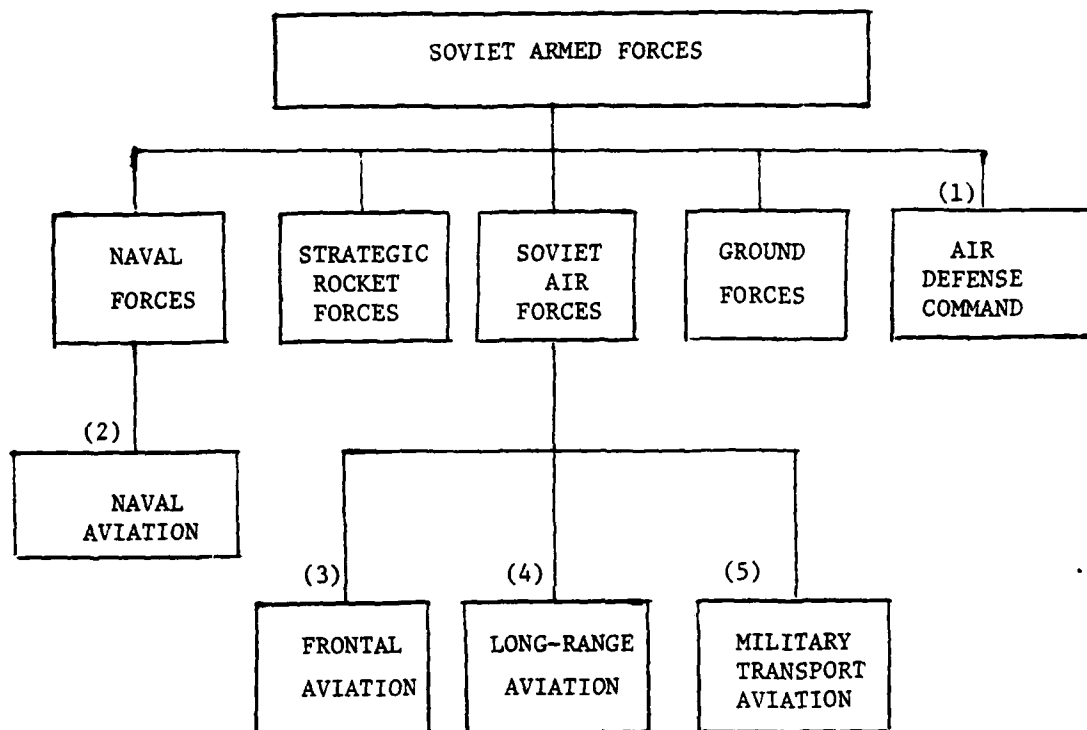
In aviation-tactical exercises the leader of a flight is habitually the most experienced pilot. The flight leader is expected to thoroughly prepare and drill his subordinates on every aspect of a mission, and they, in turn, are expected to emulate his every action during the execution of the mission. This procedure has been criticized as contributing little to the training and experience of young pilots.⁴⁴ In addition, it would seem to create a situation in which considerable confusion could result if the flight leader were shot down or, for some other reason, unable to complete a mission.

Soviet Frontal Aviation is still a force in transition, attempting to resolve many of its weaknesses and seeking to match the capabilities of equipment and personnel. The period of rapid modernization that began in the late 1960s has made Frontal Aviation a much more balanced force, with potent offensive power. At the same time, this rapid modernization has created some new problems, as well as aggravated some older problems in employment procedures. These weaknesses somewhat degrade Frontal

Aviation's overall effectiveness and certainly create some potential opportunities for an opponent to exploit in the event of hostilities. The main question is: how long will it take Frontal Aviation to resolve its difficulties in command, control, and coordination?

It should be remembered that the Soviet Armed Forces overcame far more severe problems in the Great Patriotic War and succeeded in driving back and defeating German forces. Frontal Aviation is now only getting its first post-War combat experience in Afghanistan. Combined-arms operations in an actual combat environment in Afghanistan should provide the Soviets opportunity to test new procedures in command, control, and coordination and accelerate the process of attempting to resolve the problems in those areas that has been on going for several years.

FIGURE 1. SOVIET AVIATION COMPONENTS



(1) 2,600 aircraft in 10 Air Defense Districts.

(2) 775 combat aircraft in 4 Fleet Air Forces.

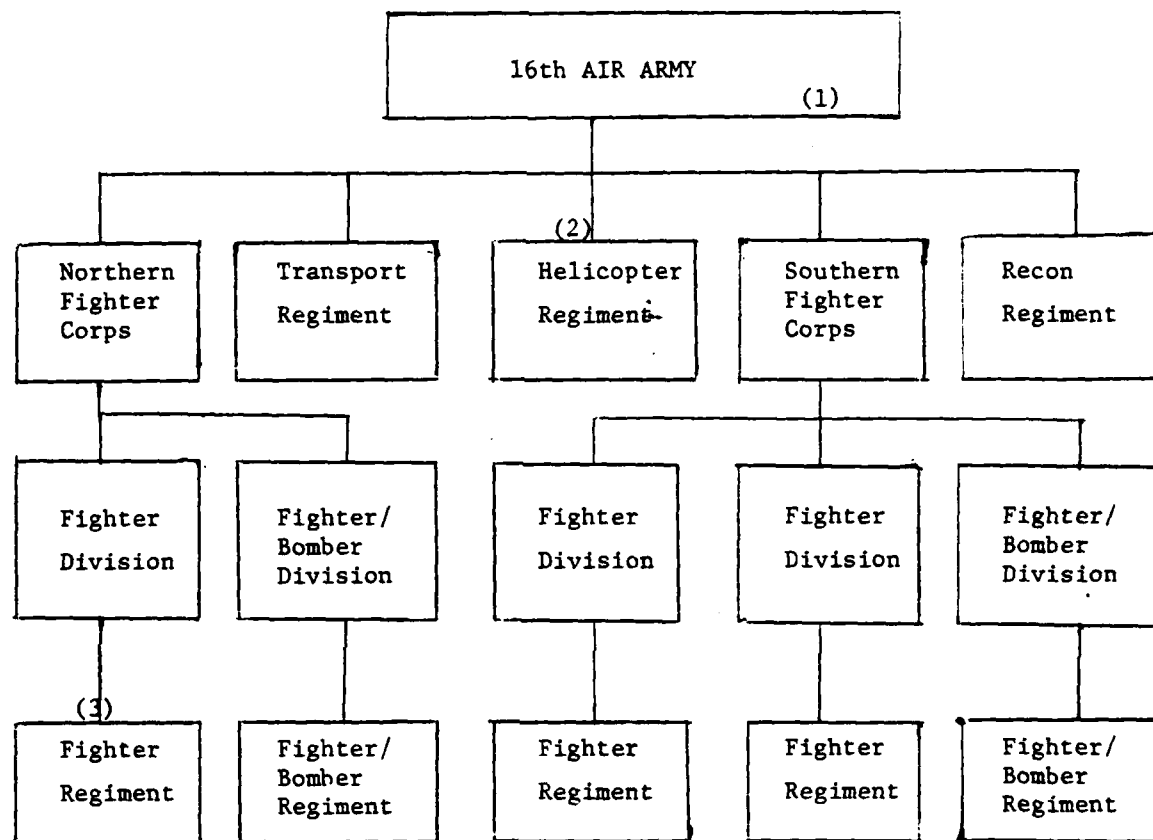
(3) 5,000 combat aircraft and 3,200 helicopters in 16 Air Armies of varying strengths. Plus 1,100 training aircraft.

(4) 850 combat aircraft in 3 Air Armies.

(5) 1550 aircraft

(Source: The Military Balance, 1980-1981. London: IISS, 1980.)
Soviet Army Operations. Washington: GPO, 1978.

FIGURE 2. SOVIET AIR ARMY (VOZDUSHNAYA ARMIYA) ORGANIZATION



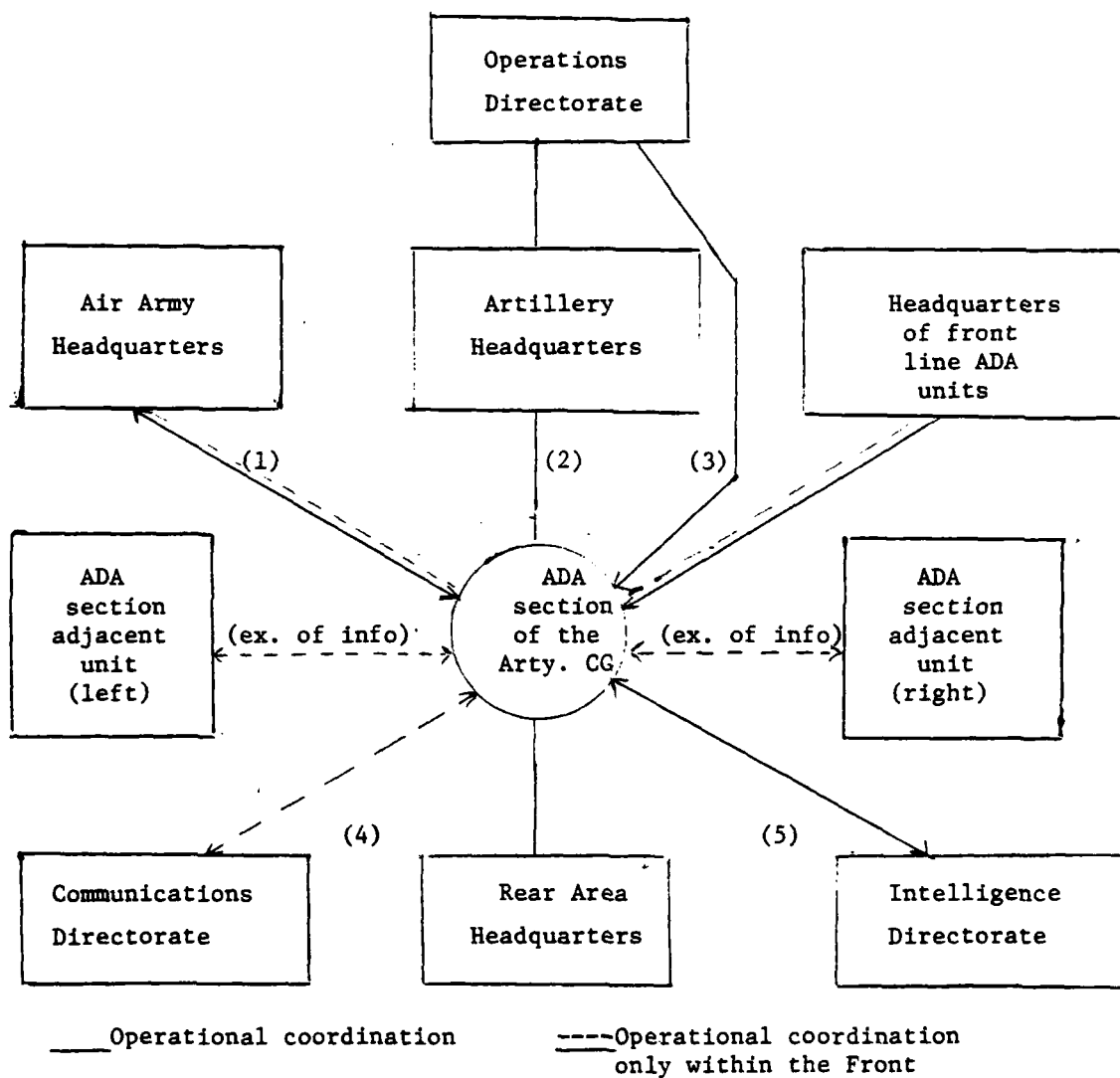
(1) The 16 Soviet Tactical Air Armies vary greatly in strength. For example, the 16th, assigned to the GSFG, has over 1,000 aircraft plus several hundred helicopters, while the 17th, assigned to the Kiev MD has only about 100 aircraft plus a complement of helicopters.

(2) Each regiment has around 80 helicopters, principally Mi-24 HIND and Mi-8 HIP.

(3) Each fighter and fighter/bomber regiment normally has 50 aircraft.

(Source: The Military Balance, 1980-1981. London: IISS, 1980, Soviet Army Operations. Washington: GPO, 1978).

FIGURE 3. OPERATIONAL COORDINATION ADA SECTION FOR A FRONT



- (1) Coordination of antiaircraft artillery and interceptors/exchange of intelligence data.
- (2) Basic operational information.
- (3) Supplemental operational information.
- (4) Organizing air warning service and communications.
- (5) Exchange of intelligence.

(Source: Vestnik PVO, No. 9 (1980), p. 75.)

ENDNOTES

¹V. Barmin, "Na urovne novoy tekhniki," Aviatsiya i Kosmonavtika, No. 11, 1978, p. 4.

²William Schneider, Jr., "Trends in Soviet Frontal Aviation," Air Force Magazine, March, 1979, p. 80.

³P. Kutakhov, "Voyenno-vozdushnyye Sily," Voyenno-Istoricheskiy Zhurnal, No. 10, 1977, p. 39.

⁴International Institute of Strategic Studies, The Military Balance, 1980-1981 (London: IISS, 1980), pp. 10-11.

⁵Kutakhov, p. 40.

⁶G. Pshenyanik, "Sodeystvie aviatsii Sukhoputnem Voyskam v forcirovanii Odera," Voyenno-Istoricheskiy Zhurnal, No. 1, 1977, p. 39.

⁷N. Ostroumov, "Aviatsionnaya podderzhka voysk," Aviatsiya i Kosmonavtika, No. 3, 1979, p. 24. The author also notes that was more complicated to arrange aviation support of armor units because of the high tempo of their offensive operations and their demand for constant support.

⁸Yu. Gudymenko, "Podderzhivaya Motostrelkov," Aviatsiya i Kosmonavtika, No. 5, 1978, p. 6.

⁹P. Masalitin, "Po edinomu planu," Aviatsiya i Kosmonavtika, No. 11, 1980, p. 4.

¹⁰Ostroumov, p. 25.

¹¹"Aviatsiya na uchenii 'Berezina'," Aviatsiya i Kosmonavtika, No. 4, 1978, p. 5.

¹²Gudymenko, p. 7.

¹³Ibid.

¹⁴Masalitin, p. 6.

¹⁵Ostroumov, p. 25.

¹⁶"Aviatsiya na uchenii 'Berezina'," p. 4.

¹⁷Ibid., p. 5.

¹⁸Kutakhov, p. 43.

¹⁹E. Tomilin, "Chto vzyat' iz boyevogo opyta," Aviatsiya i Kosmonavtika, No. 12, 1980, p. 27. See also A. Anikeenko and V. Pimenov, "Vnezapnost' v deystviyakh takhticheskoy aviatsii," Voyennyy Vestnik, No. 2, 1980, pp. 64-67; and I. Timokhov, "Kharakter i sposoby bor'by za gospodstvo v vozdukh," Voyenno-Istoricheskiy Zhurnal, No. 7, 1980, pp. 26-34; for similar discussions of the same topic.

²⁰Ibid.

²¹Ibid.

²²F. Shesterin, "Protivovozdushnaya oborona v lokalnykh voynakh," Voyenno-Istoricheskiy Zhurnal, No. 10, 1977, p. 77.

²³Ibid., p. 80.

²⁴Kutakhov, p. 42.

²⁵Colin Gray, "Soviet Tactical Airpower," Air Force Magazine, March 1977, p. 69. The heavy stress on constant, positive GCI control of interceptors may, however be changing. In a number of recent articles, Soviet authors have discussed the employment of groups of interceptors in independent search and intercept missions. See, for example, Masalatin's (Aviatsiya i Kosmonavtika, #11, 1980) comparison of two different (one correct, one incorrect) techniques used in such operations during Exercise "Neman".

²⁶"Voyska PVO na novom etape," Voyennyy Vestnik, No. 8, 1973, p. 59. In conducting the research for this report, this author noted only two Soviet journal articles which dealt specifically with the issue of air-space management, both of which were published in 1980. This could well indicate that the Soviets are just beginning to seriously approach the problem. (Vestnik PVO, No. 7 and No. 9, 1980).

²⁷K. Laurent'yev, "Upravleniye sistemoy PVO Sukhoputnykh Voysk v Velikoy Otechestvennoy Voyne," Vestnik Protivo-vozdushnoy Oborony, No. 9, 1980, p. 76.

²⁸"Aviatsiya na uchenii 'Berezina'," p. 5.

²⁹A. Vereykin, "Trizhdy na razvedku," Aviatsiya i Kosmonavtika, No. 8, 1979, p. 21.

³⁰Ostroumov, p. 25.

³¹Vereykin, p. 21.

³²P. Bazamov, "Napryazhenno v dinamike," Aviatsiya i Kosmonavtika, No. 11, 1979, pp. 6-7.

³³G. Ivanov. "Krylom k krylu," Krasnaya Zvezda, 12 September 1980, p. 1.

- ³⁴International Institute of Strategic Studies, pp. 10-11.
- ³⁵A. Paliy, "Radioelektronnaya bor'ba v izrail'sko-arabskikh voynakh," Voyenno-Istoricheskiy Zhurnal, No. 7, 1980, p. 71.
- ³⁶Ibid.
- ³⁷"Aviatsiya na uchenii 'Berezina'," p. 5.
- ³⁸V. Sekhin, "Nad polem boya -- vertolety," Krasnaya Zvezda, 28 May 1980, p. 1.
- ³⁹Masalitin, p. 5.
- ⁴⁰Gudymenko, p. 6.
- ⁴¹V. Demko, "Kogda nad polem boya vertolety," Krasnaya Zvezda, 23 March 1980, p. 1.
- ⁴²V. Dovgalyonok. "Hitting Ground Targets," Soviet Military Review, No. 1, 1980, p. 24. Also, Barmin ("Na urovne novoy tekhniki") points out that modern aircraft have sophisticated on-board navigational and sighting equipment that allows the pilot to make a strike under any conditions, but, at the same time, he points out the necessity of the pilot to have visual contact with the target.
- ⁴³"Aviatsiya na uchenii 'Berezina'," p. 7.
- ⁴⁴Bazanov, p. 7.

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